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THE PERMANENCY OF PHOTO-MECHANICAL REPRODUCTIONS.

BY JULIUS F. SACHSE.

NO subject connected with photography is more discussed at home and abroad in the various clubs, scientific meetings, and periodicals than the permanency of pictures produced by the various photographic processes. The much abused silver-print upon albumenized paper naturally comes in for the largest share of the discussion, and multitudinous are the causes given for the lack of stability. It is a well-known fact that prints are met with made thirty to forty years ago, with but ordinary manipulation, which to day are still in a perfect condition; on the other hand it is not a difficult matter to find prints made less than a year ago with all care possible as to manipulation, chemicals, and selection of paper, which have so deteriorated as to be worthless; seeming to carry out the statement of an English contemporary, that "the permanence of silver-prints can never be guaranteed, no matter what care is taken in their preservation."

The same holds good in a greater or less degree not alone in photographic productions, but applies equally to every piece of printed matter, book or picture, into whose composition enters the paper and printers' ink of the present day.

Experts in paper and its manufacture have long since predicted that the books and magazines of to-day will fall to pieces before the middle of next century, while chemists tell us that the printing

inks now in use, in place of improving by age, will soon eat their way through the pages holding the impression. In other words we have no greater guarantee that our printed matter will reach the succeeding generations a century hence in good condition, than that our grandchildren will view the photographs of their ancestors in a recognizable state.

In view of the above surmise, if it be the case, the question naturally arises, For what object are we all working? Not for the future surely,—yet literature and photography in all their ramifying branches are intended to work mainly for the future,—incidentally only for the present. Take away the factor of permanency, and the chief aim and object of both arts is lost, leaving the worker without any inducement to devote himself to either of the two professions.

Another problem which presents itself is, Why should any condition of affairs exist which threatens to destroy the usefulness of two of our most widely disseminated arts? Why is the evil not overcome?

The fact that some photographic prints have stood the test of almost half a century, and that we have books and prints made one and two centuries ago, together with specimens of the early printers, which in place of deteriorating have even steadily improved by age, while others have crumbled to dust, certainly proves that the whole trouble lays mainly with the paper.

It is argued that the books which have survived a century or over were made of hand-made paper of honest rags, without the use of deleterious chemicals; also that the photographic paper of four decades ago was made from much purer stock, and bleached without strong chemicals, while at the present day it is stated that any pulp is suitable for paper provided an acid can be found powerful enough to treat and bleach the pulpy mass.

This fact was pertinently set forth at a late meeting of the Philadelphia Photographic Society, by a member who is in the business, when he stated that "the manufacture of paper within the last few years had changed very much, and it was hard to tell what was put in papers nowadays,—anything, even to old gum boots."

One of the main reasons why this evil is not overcome is the so-called spirit of our age, with its competition, the aim of all manufacturers being to produce their wares at a lower price than their competitors, and at the same time make a greater profit. It is this state of affairs which gives us papers innocent of fibre, but strong in wood pulp and deleterious chemicals.

What is wanted at the present time is a medium or base for typographical as well as photographic work, which will ensure permanency beyond any reasonable doubt.

From the earliest ages it has always been the object of the human race to transmit the heroic part of their history to posterity. How the desire for permanency developed is shown by the successive stages of progress. In the earliest days palm leaves were employed; then the bark or rind of trees was tried, as it offered a greater and more regular surface; then in turn came waxed tablets of wood, sheets of soft lead, stone slabs, terra cotta, linen, papyrus, panels of bronze, tablets of ivory, and skins of animals and fish, until finally paper was introduced by the Saracens, which shortly supplanted all recording mediums which had not already given place to parchment.

It was Pliny who observed over 1800 years ago that "All the usages of civilized life depend in a remarkable degree upon the employment of paper, at all events the remembrance of past events." The question of a permanent substitute for paper, on account of its deterioration with age, is an old question, and dates back for more than two thousand years, when Eumenes, king of Pergamos, 200 B.C., contrived a method of preparing the skins of animals for the purpose. The name of Crates, of Mallos, is also associated with that of Eumenes in this invention. These prepared skins are what is known as parchment, upon which all important documents have been written, and occasionally printed, even unto the present day, as the skins, if properly prepared and used with honest inks, give us a reasonably permanent record.

The cost of the vellum, its peculiar nature, and the limited source of supply, however, limit the use of this medium to special work. This problem of a durable medium for recording passing events is a vital question, yet, strange to say, with all the scientific

attainments of this enlightened age, we are as far from a solution as were the sages of twenty centuries ago.

What has been said about the nondurability of the printed matter of to-day applies equally to our photo-mechanical reproductions; for instance, we are told that a half-tone printed in printers' ink upon fine coated paper is permanent beyond any doubt. There is no greater delusion. Take for an example our illustrations in the JOURNAL; they are printed upon the heaviest and best coated paper procurable,—how long are they going to last? Printers and interested parties will answer that they will be as good 100 years to come as now. So far so good: we hope so, but do not believe it.

Now let any one who is interested go to any of our large libraries and ask for a book with steel engravings printed upon coated or "satin" paper, such as was in vogue for fine work half a century ago. Upon examining the plates it will be found that the metallic surface has become oxidized and discolored, and in many instances completely ruined, and this with honest fibre paper, and without the use of deleterious chemicals in the process of manufacture. Now in what state will our present half-tone plates be in the year of grace 1950?—considering the metallic coating upon a web of wood fibre or macerated straw, on which an impression is printed or laid with the cheap inks of the present competitive age, which will "set off" even a year after it is printed.

Under present circumstances little guarantee can be even given that the paper upon which our finest photogravures are printed will not crumble to dust long before the twentieth century has become a cycle of the past. It has been noticed that the plate paper used for this process was so brittle that it showed a fracture at the plate mark, and this, too, with careful printing.

We have here a vital question, which affects all persons engaged either in photography, literature, or the photo-mechanical processes, and it is well worthy of the consideration of our scientific and photographic societies at home and abroad.

THE WET COLLODION PLATES.—II.

BY ELLERSLIE WALLACE.

(Continued from page 101, Vol. XIII.)

AS the prepared wet collodion plate has to be exposed in the camera and developed within a few minutes, or before the film has time to dry, it is hardly necessary to say that everything must be in readiness for exposure before the preparation of the plate is begun. I may say here once for all, that the dark-room in which the collodion plates are prepared and developed need not be as dark as when gelatine plates or films are used. If daylight be admitted, one thickness of good pot-metal orange glass will often suffice, though it is well to have a screen of yellow post-paper or a couple of folds of yellow muslin ready in case the sun should strike upon the glass. Of course only one pane of the window is to be glazed with the yellow glass, the remainder of the sash being darkened with some opaque material. If a gaslight be preferred, surround it with a yellow glass chimney.

A very little work in the abundant pleasant yellow light of the collodion dark-room will convince the operator of the great saving of eye-strain. A collodion dark-room is perfectly safe when so full of yellow light that the labels on bottles in the darkest corners can be distinctly seen. It is never necessary to employ red light, which is so injurious to the eyes.

No particular directions as to the fitting up of the collodion dark-room need be given. The two most important things are plenty of safe orange-yellow light, and free ventilation to carry off the fumes of the collodion and the acid developer. It is taken for granted that there is a good water supply, and heat enough in winter to make the room quite comfortable to work in.

Before making up a stock of collodion, a number of bottles should be selected, fitted with good, sound corks, and thoroughly cleaned. I always prefer *new bottles* that have not been used before. After being well washed, they are turned bottom up to drain for an hour or two, and finally rinsed out with an ounce of

pure alcohol to remove all traces of water. This apparently trivial matter should never be neglected.

Collodion is a solution of pyroxyline or gun-cotton in ether and alcohol. Care must be taken that the materials are of good quality, and they are to be bought only from dealers of established reputation. The alcohol and the ether are both specially prepared, and the above hint about removing all water from the bottles is important in preventing dilution of the spirits and consequent spoiling of the collodion. The ether should never show an acid reaction to test paper. The cotton should be nearly white, free from smell, and when a portion of it, the size of a cherry, is exploded on white paper, there should be only a few black sandy grains of ash left behind. It must not be forgotten that all photographic "cottons," as they are called, are violently explosive, and that ether and its vapor are very inflammable.

The most convenient plan to pursue in collodion making, is to make up a considerable quantity, say a gallon or more, and to prepare the iodizer or exciting fluid in a separate bottle. If the iodizer were incorporated with the collodion directly, the whole would be spoiled after a few weeks' time. Therefore small quantities of the plain collodion can be decanted off from the stock bottle, and iodized, according to the amount of work to be done. The collodion always requires a few days to "ripen" after the exciting fluid is added; it is then in good working order, and will remain so for some days or weeks, depending upon the formula used for the iodizer.

The behavior of collodion, under the the action of different iodizers, is so interesting and so useful a thing to know that I wish to speak of it a little more in detail. The alkaline iodides, such as magnesium, ammonium and potassium, will ripen a collodion very quickly, say in twenty-four hours or so, but within a few days the collodion will turn red, lose sensitiveness, and run thin like water. The same is true of the alkaline bromides, which are always combined with the iodides in the proportion of about two-and-a-half parts of the latter to five parts of the former. For instance, a collodion might be made up as follows: Dissolve four-and-a-half grains of iodide of ammonium and two-and-a-half

grains of bromide of magnesium in half an ounce of alcohol. Filter, add half an ounce of ether, and finally add five or six grains of negative cotton, and shake till dissolved. This collodion might be used the next day, and would retain its exquisite sensitiveness for rather less than a week. But supposing that five grains of iodide of cadmium were used in place of the magnesium, the collodion would not be in good condition to use inside of five days, and would be better if kept for two weeks. The amount of cotton in this case could be reduced to, say, four-and-a-half grains, instead of six, for the iodide and bromide of cadmium have the property of thickening collodions and ripening them very slowly. In fact, their action is the opposite of that of the alkaline salts.

Now with these facts plainly understood, it is easy to see that collodions of all kinds to suit all kinds of work may readily be made up. Suppose a collodion is wanted for slide-making, and to give a thin, very even, and perfect film without too great density. In this case it would be well to combine the cadmium and ammonium salts in about equal proportions, and give the excited collodion a couple of weeks to ripen. If it proved to be a little too thin, half a grain per ounce additional cotton could be used, and the collodion immediately filtered through one of the tall glass-capped filters sold for the purpose. On the other hand, when great density is required, as for copying fine engravings, etc., the collodion should be made considerably thicker at first, increasing the cotton to six or seven grains per ounce, and the iodine to six grains. It must be remarked that the quality of the collodion always depends in great degree upon the cotton. Some samples give thickness enough with four-and-a-half grains to the ounce of mixed ether and alcohol, while others may be used in as high a proportion as eight grains. The best results are generally obtained with about six grains, and the cotton ought always to be perfectly soluble and not leave any great amount of white gummy residue behind. The most useful formula for collodion for average work is as follows:

Snowy cotton	6 grains.
Ether	½ ounce.
Alcohol	2½ drachms.

A few days before use add to the above *one-and-one-half-drachms* of the following iodizer:

Alcohol	1½	ounces.
Iodide of cadmium	28	grains.
Bromide of cadmium	10	"
Chloride of cadmium	4	"
Iodide of ammonium	20	"
Bromide of ammonium	7	"
Iodine	1	"

The above is an old and well-tried formula. The iodized collodion remains in excellent condition for more than a month. The chloride of cadmium and the iodide are unimportant, and may be omitted if preferred. The iodide is merely added so as to give color to the collodion, and the chloride confers a little more density upon the film. As before remarked, the plain collodion should be made up in quantity and allowed to settle until clear, and the top portions decanted off for use. The above quantity of iodizer is intended for eight ounces of iodized collodion, the proportion of equal parts of ether and alcohol being exactly made up when the collodion and iodizer are mixed. It is not advisable to make a very large quantity of the iodizer at once, and it should be kept side by side with the plain collodion on a shelf in a cool, dark cellar.

Those who prefer to buy collodion ready made will find a good assortment at the dealers. But it is more economical to make it, and for myself I can say that I prefer the above to any commercial article.

Amiability, courtesy and tact, should be prominent accessories in every gallery.

By light and shadow all objects and parts of objects are made to project or recede, to strike or retire, to court or to shun the attention of the spectator, agreeably to truth and propriety. Thus, if properly managed, it contributes infinitely to expression and sentiment; it lulls by breath and gentle gradation, strikes by contract, and rouses by abrupt transition.

IMPRESSIONISM IN ART.

BY XANTHUS SMITH.

SO much attention is now being drawn by exhibitions, sales of paintings, and magazine and newspaper articles, to the subject of impressionism in art, that a few words may not be without interest to our readers, both amateur and professional, upon that subject.

There can be little or nothing in the so-called impression art that possibly can, or should be, in sympathy with the tastes and feelings of the photographer, because his art deals truthfully with nature, whereas the art of the impressionist does not.

We must explain, however, at the outset what impressionism really is.

It refers solely to those transient effects in the appearance of scenes and objects in nature which make an impression on the beholder at the time, too brief to be copied, but which may be carried away in the mind and reproduced in future, with just so much truth as it is in the power of the individual to carry and set down upon his paper or canvas.

The power to store up quickly in the mind a large amount of a picture, as presented to us in nature, and afterwards to reproduce it by the materials of painting, is a rare one, and contributes a very important part of what is known as genius or talent in a painter. Impressions, as painters call them, constitute probably the highest qualities in art, and solely because it is those only who are gifted as artists who are capable of receiving choice impressions and fixing them in such a way as to convey them for the pleasure or benefit of others.

Thousands there are who are capable of copying faithfully, where prolonged time permits, natural scenes and objects under the ordinary conditions which may endure for hours or days together, but such are never rated above mediocre. Their work is little more than a sort of higher mechanism, and hence the great importance of impressionism, which gives us, in addition to

this truthful rendering, those higher transient beauties which constitute the true poetry of nature.

While impressionism holds the high place which it does in art, it is yet not the end, but merely a constituent of complete art expression or reproduction, and therefore artistic impressions as set down upon canvas or paper are merely stages in the progress of finished pictures. They are called sketches, and if parted with during the artist's lifetime are valued at a minimum rate, as works which, though requiring talent and effort of memory, are quick of reproduction and incomplete as pictures, though they may become extremely valuable after the death of an artist, as in the case of all eminent deceased painters.

The sketches or impressions of artists may be in simple outline, in which case they refer to composition; or in washes of light and dark, which constitute impressions of effect; or lastly in color; and in the progress of a complete picture there are generally representatives of all of these. They are valuable auxiliaries; but in addition, on the finished canvas, there should be admirable drawing, and beautiful execution, as painters call it, referring to the use of the colors and brushes, and delicacy and refined harmony in the coloring, all requiring acquired skill and application, often for months together, to convey the look of finish and truth to nature that a legitimate work of art should possess in its complete form.

By a curious combination of circumstances, the two following having an important bearing in the matter, namely, the foisting off on the public, by some dealers, of the crude sketches and unsuccessful efforts of some men of ability as great paintings, and the rage for novelty and sensation of a lot of incomers in art, an entirely mistaken idea in relation to art has come about, one, unfortunately, that is exceedingly detrimental to the cause of good and true art and its legitimate aims, and mystifying to the public and discouraging to the legitimate painter.

The good old idea that the ability to be a painter is a gift of nature has become almost extinct. The ruling belief now is that painting may be acquired by simple teaching, just in the manner that any trade may be learned by anyone who takes the notion to pursue it, and the consequence is that there are a thousand

painters to-day to one that there was twenty-five years ago. Hundreds of ladies and gentlemen of means take to art at present as an agreeable if not a lucrative pursuit. Four-fifths of these are not only absolutely devoid of sufficient talent for the pursuit, but have not even sufficient application to tax themselves with the drudgery necessary to attain any degree of excellence.

Is it to be wondered at, therefore, that these would-be artists seize with avidity upon a means of expressing themselves in art which enables them, with little thought and less labor, to cover their canvas with inane daubs, which they can exhibit to the public as wonderful productions of the new school of painting.

Many of those who really would be picture buyers are mystified. They are told by many ignorant critics and by the adherents of the impression school that these works, in which they can see no resemblance to nature and no beauties as works of art, convey certain inexplicable qualities which lift them above the realm of the common understanding, and when they look upon a true work of art, full of the beauties and truths of nature, the result of skill and thought which they feel must be right, and are told that such is mere chromo work, they turn from both, having nothing to do with either, inwardly feeling that they are not in sympathy with the one,—that if they place it upon their walls it can give them no pleasure,—and that if they purchase the other, which their better judgment tells them is right, they may only be exposing their ignorance of high art.

It is in landscape art that impressionism has made the greatest headway. People will not tolerate in figure subjects the extreme vagaries in the way of bad drawing and execution that they will in landscape scenes. Poor landscape! Strange to say, people will pause and wonder over, and some accept as highart, the veriest daub for a tree or a cloud, in which in reality there is all the choicest delicacy and refinement of drawing and coloring which nature can bestow, while they will laugh at as an absurdity a human face which is attempted in representation by a mere smearing of the canvas.

An additional and potent factor in the success of impressionism is its lucrativeness to some dealers. By securing the unfinished

studies and crudest sketches of noted foreign painters at comparatively trifling sums, and disposing of them on this side of the water as wonderful productions of genius for enormous sums of money, and further, on account of the extreme ease and rapidity with which impression pictures may be counterfeited, and at the most trifling cost, and the tremendous profit in the disposal of these spurious pictures to rich but ignorant purchasers, as genuine works, for large sums, it has become a business well worth pushing to the fullest extent. It matters little to the buyer whether the work is genuine or not. He purchased it as genuine; the artist accredited with it is not on the ground to say whether he painted it or not, and who dare dispute it. Is there not infinitely more eclat in displaying to your visitors pictures by Corot, Daubigny, Rousseau, etc., even if they do look like the veriest daubs, than in showing them faithful work by artists of your own town, whom you and your friends know personally?

It is not a question of love of nature and art with the present American picture buyers, but of mere notoriety as an art patron.

Is it to be wondered at that a host of young artists and their friends should cry up this new and easy road to fame which spares all the earnest application necessary to be a very fine draughtsman or highly skilled applyer of the materials of painting, and spares all thought, and study of the fundamental principles of art?

We can only hope that sensible people generally will pause, and remember that art is founded on nature, and that whenever it strays too far from her truths and beauties it is off the track.

Hamerton, the greatest living art critic, says of the present French art that is over-ripe,—"it is rotten"; and to close let me quote what H. P. Robinson, the great art photographer and writer, whose views are so well known to all intelligent photographers, and cherished by them, has to say upon the subject of impressionism in art:

"Incoherence in art.—There are no words that can say how bad art may be when it is divorced from those qualities on which it has relied for ages,—from composition, chiaroscuro, meaning; from articulate and intelligible speech. In literature many uneducated and incompetent persons get pleasure, and, if

properly worked, some fame, or, at least, notoriety, out of scribbling incoherences. Impressionism may be called the incoherence of art. If it can be mixed up with vague emotions, it is so much the more taking.

"Impressionism is best suited to those who have not taken to serious art. It is a flattering amusement to the ephemera of art—the young student who lives for the present and cannot hope to get much further, and the amateur who takes to art late in life as a distraction from the cares of business. It is easy to the operator, and *not* easy to be understood by the spectator, having that touch of mystery which is almost as delightful as tricks with cards."

The latest photographic novel is Grant Allen's "Recalled to Life" (Arrowsmith, 3s. 6d.), wherein the heroine is found, at the opening of the tale, in a room alone with her murdered father. The said father has invented a machine camera which takes six instantaneous photographs in succession by the aid of an electric light. During the murder the machine has "gone off," and has presumably taken six pictures of the dreadful scene. But of the six only one negative can be found, and this is a back view of a man escaping from the window, and must therefore have been the last of the series. The heroine has entirely lost all memory of the scene and of everything in her life which happened before the dreadful occurrence. Her health is restored, but not her memory, and she devotes her life to the discovery of her father's murderer. She finds at last in a "snap-shot" photo. of some athletic sports a man with a back precisely like that in the "machine photo.," and she travels to Canada after him. He turns out to be her old lover, and he is also possessed of the five missing negatives. These show that the murder was not a murder, but that the dead man, who was an imposter and not the heroine's father at all, was killed by the young lady herself in self-defence. The story is an exciting one, but we fear that Mr. Grant Allen would find it difficult to answer the questions which a practical photographer would be inclined to ask.—*Bulletin.*

A beautiful smile is to the female countenance what the sunbeam is to the landscape. It embellishes an inferior face, and redeems an ugly one.

PLATINUM TONING AS APPLIED TO GELATINO-CHLORIDE PRINTING-OUT PAPER.

BY JAMES BROWN.

[Read before the Northern Counties Photographic Association.]

FASHION, which regulates the cut of our garments, has, as might be expected, some considerable influence in matters photographic. During the past two years there has been a steady movement in the direction of warmth of tone. In the higher regions of photographic art there was a time when "Big and Black" held supreme sway, and anything approaching tones which most of us now admire was a thing held accursed. Now men's minds are everywhere asking, How shall we arrive at the warmest tones? and skilful concocters of formulæ are holding high revel in their search for the mystic process which shall forthwith make all things sepia. The numerous methods of toning (or staining) bromide papers recently published afford evidence of how strong is the revolt against blacks. We have, indeed, need to be careful lest, by over-doing it, we induce a revulsion of feeling. Above all, let us not outrage the eternal fitness of things by such proceedings as printing winter landscapes a bright red, and so forth.

Amongst all the methods of getting rich warm tones, I know of none equal to that which it is my privilege to bring before you to-night—viz., the use of a gelatino-citro-chloride of silver paper and chloro-platinite of potassium as the toning agent, as by its means we can get tones of the most exceeding richness and warmth with ease and certainty.

Gelatino-Chloride Described.—After lying stagnant for many years, the gelatino-chloride process has at last become very popular. In its original form it was a collodio-chloride emulsion, invented by Mr. G. Wharton Simpson in 1865. It never made much headway—why, it is difficult to say. To my mind, a collodion image is in many points superior to a gelatine one. Amongst its principal exponents was a north-country photographer—Mr. George Bruce, of Duns. In 1882 Captain Abney

proposed a gelatine emulsion, and his formula became the foundation on which every one has subsequently built, until the analogous collodion paper was almost forgotten. On the Continent, however, there has for the last year or so been in use a collodio-chloride paper, and recently a similar product, under the name of Celloidin paper, has been introduced into the London market by Messrs. H. Kuntzen & Co., samples of which I show you to-night. The late Herr Obernetter was first in the field, in 1885, with his now celebrated emulsion paper, followed by Liesegang, and after the lapse of five or six years we now have the choice of at least two brands "made in England."

My intention to-night is not to read a scientific paper, or to indulge in any theoretical or chemical speculations, but rather to go upon solid ground, over which I have myself trodden, steering clear of everything which has not been thoroughly substantiated in my own experience, and will treat (1) of printing, (2) of the toning bath, (3) of the process of toning, and (4) of finishing.

It may be mentioned here that my experience almost solely relates to Obernetter paper, but I have handled nearly every brand in the market, and shall have something to say of each.

Printing is conducted in the ordinary way, any negative that is not either hopelessly thin or dense being suitable. Contrary to the text-books and advice so plenteously given, it is not necessary to over-print any more than on albumen paper—in fact, to do so is in most cases distinctly harmful.

After toning with platinum, no paper I have yet tried reduces to any great extent in a properly made fixing bath, and if we desire a matt surface, and so squeegee on ground glass, that operation considerably adds to the depth of the image; so, if we over-print, "leatheriness in the shadows" will result. It is necessary to remember, however, that the depth of printing must have some definite relation to the tone we desire to obtain. This will be discussed when we come to the toning stage.

The toning bath which I have found to be the best is a simple one :—

Potassium chloro-platinite	1 grain.
Citric acid	10 grains
Distilled water	4 ounces.

A platinum bath will only work when acid, and the use of citric acid, instead of nitric, as usually recommended, is a great improvement, due to Professor Burton, who found that the latter acid has a staining influence upon gelatine.

Other baths have been recommended, which are not so good as the above, and possess the serious disadvantage that they will not keep, whereas this one will keep indefinitely, provided the prints be properly washed before toning, so as not to contaminate the bath by silver salts. I have here a bottle containing a bath made up over two years ago, which has been in constant use ever since, strengthened when necessary by adding more platinum, which I keep in a dropping-bottle mixed in the proportion of one part platinum to twenty parts water. When of proper strength, the bath is of a dark straw color, and as the toning agent is used up the solution becomes paler, so that by a little observation it is easily seen when the bath wants strengthening.

The Manipulations of the Process.—Coming to the actual manipulations, the first item is the preliminary washing, which must be *thorough*. The first wash must be thoroughly performed, so as not to keep the prints soaked in the dissolved-out silver, else yellowing of the high lights will result. After four changes of water, it is necessary to dissolve out all the remaining free silver by a salt bath. After a minute or two in this, and another rinse in water, the prints are ready to tone. At this stage they are but little changed, and the process of toning, unless much prolonged, produces no effect that is visible to the eye. We only discover what tone we have got when the prints are in the hypo bath ; but the action is so regular that success is certain. It is instructive, however, to see what color of images we are working upon by fixing a print without any toning, and I will presently show you a few examples. It will be found that the image suffers a very considerable reduction, and partakes of a yellowish-red hue. By simply fixing without toning, warm red tones can be got if we print deep enough to compensate for the reduction that takes place, and there is no reason to suppose that such images could fade any more than does a bromide print. Indeed, the chances are in favor of the former, as it has not been in contact with any

salts of iron, or acid clearing bath. I have spoken of the necessity of keeping up a definite relation between the depth of printing and the ultimate tone desired. Simply fixing a print reduces its depth, but the more platinum we associate with the silver image, the less does it reduce. This applies to all papers, but in a greater degree to the Ilford "Printing-out-paper." Toning then proceeds on certain definite lines, the stages being red, reddish-brown, sepia, brown, dark brown, and purplish-brown. For the first stage, printing ought to be continued till the deepest shadows are slightly bronzed, and the the toning will take, say, five minutes. With such an over-printed image, longer toning seems to intensify the print, and to block up the shadows. For any other tone than red, it is not advisable to print till the bronze stage is reached, but to stop when the whites are slightly tinted, and toning will be accomplished in from five to fifteen minutes. The warmth of tone which is the characteristic of this process, it is evident has for its foundation the yellowish-red of the silver image, and, as we associate it with platinum in a greater or lesser degree, the tone varies from a warm red to the other shades I have named. There have been various attempts to completely substitute platinum for the less staple silver, but with no success. It was first supposed that the toning process was a depositing of metallic platinum upon the image; then it became the belief that a partial substitution took place; but Lyonel Clarke, in his book, assumes, with considerable show of reason, that an alloy of silver and the nobler metal takes place. Be that as it may, it is a process which, for certainty and beauty of results, merits every one giving it a fair trial.

After toning, the prints may be immersed in a weak solution of common soda, to neutralize any acidity present and stop toning, or may be placed direct in the fixing bath, made distinctly alkaline with ammonia, and not stronger than one part hypo to eight parts of water. For the sake of giving the prints a fair chance in the battle of life, it is advisable to have the hypo bath fresh, and to fix for not less than half an hour, After thoroughly washing in copious changes of water, the prints are given a five minutes' soaking in a bath of chrome alum of about twelve grains to the

ounce. To avoid acidity, neutralize this with ammonia, and filter out the dense precipitate which is formed. This is of the greatest advantage, as it hardens the gelatine and renders it almost impervious to damp. So great is its hardening effect that a print so treated and dried cannot again be softened, and resists water almost boiling.

The next stage is the squeegeeing, which is best done upon finely ground glass. Bear in mind, however, that this must take place as soon as they are washed free from the chrome alum, as, if they are allowed to dry, they cannot be so treated. The adoption of the alum bath makes the sticking of prints to the glass almost an impossibility, and this is no small advantage. Much rubbish has been written about cleaning the glass plates previous to putting down the prints—by myself amongst the number. If really dirty, monkey soap will remove it all. Flowing hot water over the plate, and rubbing with the palm of the hand will do the rest. It can then be placed under the tap and cold water run over it, then place the print in position, with blotting-paper on the top, then a piece of waterproof sheeting, and squeegee vigorously. It is necessary to remember that any attempt to remove the prints before they are dry is to court failure. A matt surface may be got much more easily by the use of finely ground pumice-stone powder, rubbing it in on the dry print by hand. Mounting presents no difficulty if the prints be properly hardened in the alum bath.

The Second Annual Photographic Exhibition of the Manhattan Chapter Photographic Section, of Agassiz Association, will be held from May 2d to May 7th, 1892, at 139 East 40th St., New York City. The Committee of Arrangements have decided to issue a catalogue of the exhibition, and are making efforts that this exhibition shall surpass the one of last year in every particular.

Newark Camera Club.—At the annual meeting held at the club rooms, 828 Broad Street, Newark, Monday evening, April 11th, the following officers were elected for the ensuing year: President, Paul L. V. Thiery; Vice-President, Thomas A. Hine; Secretary, David S. Plumb; Treasurer, Frederick T. Fearey.

Dr. Joseph Maria Eder has been elected an honorary member of the "Societâ Fotografica Italiana," in Florence.

PLATINUM TONING ON MATT-SURFACE PAPER.

BY T. O. MAWSON.

(Read before the Newcastle-on-Tyne Photographic Association.)

AT the present time there are so many different printing papers in the market that it is difficult for the amateur photographer to decide which process to adopt. The tendency at present is to obtain warmer tones on a rough or matt-surface paper. I hope to demonstrate to you this evening how very simply this is done.

We have all worked with the ordinary albumenized paper, and can, doubtless, produce a good print, and, as the working of plain paper is in every respect similar, I think you will all agree with me that this process is better suited to the amateurs' requirements than any other.

Very beautiful matt-surface prints can be obtained on any of various brands of gelatino-chloride papers; but the manipulation of these papers is a little more complicated. The prints require to be passed through an alum bath and then squegeed on to ground glass, or rubbed with powdered pumice-stone till the desired surface is obtained. These operations are of course not required if you start with the matt-surface paper. Toning takes only a fraction of the time required to tone albumenized paper with any of the usual formulæ for gold baths. Blisters (the bête noir of the amateur) are unknown; there is neither albumen nor gelatine present to cause these objectionable comparisons.

The brand of paper I have always worked with is that made by Mr. Valentine Blanchard; he sends his paper out with a supply of toning solution sufficient for the paper. My own toning bath is made up from the formula given in Mr. Lyonel Clark's work on platinum toning, and I may as well mention here that the formulæ I shall have occasion to mention later on are all taken from that same excellent work. I have tried them myself, so can testify to their working satisfactorily.

I will now run through the operations necessary to produce a matt-surface, platinum-toned print, and am sure, if any of you will

take the trouble to sensitize your own paper, you will be amply repaid; you will find the home-sensitized paper prints much more quickly than the commercial article, and another great advantage is, you can select a paper with the necessary degree of roughness to suit the subject you are about to print.

The paper I have used when sensitizing has been Whatman's drawing paper. This is excellent paper for the purpose, and can be had in several grades of surface. The rough water color paper is specially suited for large prints. It has only one objectionable feature, and that is, it is very porous, and before the end of the washing gets something like saturated blotting-paper; great care is therefore necessary to prevent tearing or otherwise damaging the prints.

Having selected the paper, the first operation is to size and salt it. This is done in one operation, the paper being floated on a solution of chloride of ammonia and arrowroot, as follows:

Arrowroot	180 grains.
Water (to one pint)	160 grains.

or

Arrowroot	180 grains.
Chloride of ammonia	120 grains.
Recrystallised carbonate of soda	240 grains.
Citric acid	60 grains.
Water (to one pint).	

The arrowroot is made into a stiff paste with a little cold water, then about fifteen ounces more water added, then boiled till clear. When clear, it is removed from the fire, and, when sufficiently cooled, the chloride of ammonia, dissolved in the remainder of the water, is added.

This solution should be allowed to stand all night; the clear portion is poured off into a suitable dish, and the paper floated on the surface of the liquid. I find Whatman's paper requires about three minutes floating to be properly impregnated with the solution. After removal from the salting bath, the paper should be laid, face upwards, on a level table, to allow the solution to be absorbed, then hung up to dry. I find, if hung up to dry

directly it is taken from the bath, that the solution runs down in streaks, and though not noticed when the paper is dry, unevenness of silvering takes place in consequence. It is as well to salt a good supply of paper when you are about it, as paper in this condition will keep any length of time. The back (or unsalted side) should have a pencil mark put on it for future guidance.

The salted paper is now ready for the silver, or sensitizing bath, made up thus: Dissolve

Citric acid	25 grains.
Water	½ ounce.
and	
Nitrate of silver	60 grains.
Water	½ ounce.

These solutions are made separately and mixed. The salted paper is then floated on the solution, care being taken that no air bubbles are between the liquid and the paper. Three minutes will be found long enough for the paper mentioned; it is then removed from the bath and hung up by a wooden clip to dry. This operation must be performed by gaslight, or in the dark room Paper sensitized in this manner will not keep very long; it is better to sensitize just as much as you require for present use.

Printing is carried on to about the same degree as with albumenized paper till there is a distinct bronzing in the deepest shadows; when sufficiently printed, the prints are washed in several changes of water and toned in following solution:

Chloroplatinite of potash	4 grains.
Nitric acid	1 or 2 drops.
Water to	2 ounces.

On immersion in this toning bath, the print immediately begins to darken, and toning to the black stage is arrived at in about five minutes. If warmer tones are required it is better to dilute the bath to four ounces with water. The action is then more under control, the toning action stopped as soon as the desired tint is obtained.

Fixing is conducted in the ordinary hypo bath, four ounces of hypo to one pint of water, made slightly alkaline by the addition

of a few drops of ammonia. I find, however, this alkaline bath has a tendency to produce a warm tone, and if a black tone is desired I use the the acid fixing bath recommended for negatives containing one ounce of bisulphite of soda, and four grains of hypo to the pint.

After fixation the prints are washed in the usual manner to free them from hypo, and dried between blotting-paper.

Having now briefly run through the necessary operations from plain paper to finished print, I think you will all agree with me that this process is about as simple as any. You have nothing new to learn; simply print, tone and fix with the usual intermediate washings, and you obtain a picture which will be "a thing of beauty and a joy forever."

According to E. Valenta, prints on salted paper prepared with a resinous emulsion, may be successfully toned by the chloroplatinite bath in the following way. The sensitive paper, which has been previously fumed foı ten minutes with ammonia, isprinted very deeply under the negative, and then toned for a short timein a freshly-prepared or old chloride of gold toning bath, as has been recommended for this paper. The prints are then rinsed with water,and placed in a toning bath consisting of

Water	300 c.c.
Potassium chloro-platinite	1 gram.
Nitric acid	20 to 25 drops.

Fixing is done in a bath consisting of 120 grams of hypo, 10 c.c. of sulphite solution (sodium bisulphite dissolved in water 32° Baume), and 1,000 c.c. of water, washing in running water for from three to four hours. Finally the prints are dried. The toning is very quick, and it will be necessary to remove the print from the bath as soon as the desired tone has been attained, to rinse it with clean water, and to place it in the above-mentioned fixing bath. The fixing process will be finished within ten or twelve minutes. If the print be left too long in the chloro-platinite toning bath, the delicate half-tones of the image will be partly destroyed. The action of the toning bath upon the prints will be slower if less nitric acid be added to it; in the case of the above given quantity of from twenty to twenty-five drops to 300 c.c. of the bath, the black platinum tones are obtained almost instantaneously.—*The Photographic News.*

NEW MODE OF PRODUCING COLORED PHOTOGRAPHS.

OUR esteemed contemporary, the *Scientific American*, in the issue of April 16th, 1892, publishes the following method for obtaining colored photographs. This time the discovery hails from the Windy City,—Chicago. Comment upon the scheme is unnecessary. We will only say that when the problem of color photography is actually solved, the fortunate discoverer will show results first,—similar to the course of action pursued by our own Mr. Ives in his color projections, and not bother the public with a description of the process beforehand.

We almost forgot to say that the promulgator of this latest color process is a James W. McDonough, who describes it as follows:

I take a support of plain glass, celluloid, paper, or other suitable substance, upon the surface of which is a sensitive photographic coating, preferably forming what is known as an "orthochromatic dry plate." This may be rendered tacky by immersion in water or diluted glycerine. If preferred, however, the plate may be used before it becomes quite dry in the course of its manufacture. I dust the plate, either while it is somewhat moist in the course of its manufacture, or after it has become tacky, as above explained, with a mixture of colors composed of fine or powdered particles containing the colors desired. I thus obtain a colored surface composed of particles lying side by side which have the properties of stippled colors instead of the properties of a true mixture of pigments. In order to get these colored particles, I use colored powdered glass, transparent pigments, gelatine, resin, shellac, or similar substances stained by aniline dyes, etc. In the preparation of the colors by means of shellac I take a sufficient quantity of clean white shellac dissolved in alcohol, to which I add aniline colors—say for one lot red and yellow colors—in such proportions that the result will be a red, which when viewed by transmitted light in layers will cut off or absorb as much green, blue, violet, and yellow as possible, or which, in other words, will transmit as

far as possible a pure red. Another lot is colored with as pure a green as may be formed by mixtures adding yellow to absorb blue. Another lot is colored blue. As the mixture of colors formed in this way by red and green does not form a bright yellow, I may use in addition another lot colored as near the yellow of the spectrum as possible. These lots, after being thus colored, are allowed to dry, forming colored masses, which are then reduced to powder by grinding, sifting, etc.

If now proper proportions of red and green are mixed, a nearly black or gray mass will be formed, and if proper proportions of red, green, yellow, and blue are mixed, a mass will be formed that is nearly black or gray; but if this same mixture is dusted or finely spread upon the prepared sensitive surface, it will reflect or transmit a mixture of all these colors, which will be white in proportion to the purity of color, cleanliness of mixture, and quantity of light transmitted or reflected. The glycerine may be washed out, so that only the colored particles in the mass in which they are arranged remain. When viewed under the microscope, the white surface is seen to be composed of a multitude of different colored particles lying side by side and separated by small distances. This surface may be flowed with a thin coat of gelatine, which will penetrate the spaces between the colored particles, or the ground and colored particles may be coated with gelatine before applying them to the tacky surface by mixing them with a small quantity of dissolved gelatine and regrinding them, according as a mat or smooth surface is required.

The process of producing the effect called "color," above described, is by absorption of light; but inasmuch as color effects may also be produced by refraction, dispersion, or diffraction of light, I do not mean to limit myself to absorption only as the means of production.

The photographic plate thus obtained, consisting of colored particles applied to its sensitive surface, may be exposed to the action of the light from the object to be photographed through a camera in such manner that this light will pass through the colored particles and affect the sensitive film, thus producing a latent image of the object. The plate may then be developed by

the use of the so-called "alkaline pyro developer," so that the colored particles will adhere to the surface, which is penetrated by the same colored light as the particles themselves, because gelatine is rendered insoluble in proximity to the silver particles in the sensitive compound where acted upon by light. Thus particles which do not allow the passage of colored rays on account of absorption may be washed off, because as to such particles the gelatine remains soluble. Thus blue rays will cause blue particles to remain as an image, white light all the colored particles in that space acted upon by white light, and all will be removed where black occurs, which does not act upon the photographic film. After the development, the picture may be treated with thiosulphate of soda to remove the sensitive compound not acted on by the light and developer. By thus developing the plate a picture is produced composed of the particles of silver and the colored particles remaining on the plate after the development. This picture may be used as a negative, or backed with a black or other colored surface as in an ambrotype. The colored image is formed by the reflection of light from the particles, or through the particles from the silver image, or by the transmission of light through them when not cut off by the image. The use of the orthochromatic sensitive plates and color screens before the camera for the purpose of sifting light and regulating the action of different colors upon the film is too well known to require explanation. I will merely add that the particles are dusted spread, or placed upon the plate in such proportions as to produce a transparent surface.

The subject of tele-photography is exciting as much discussion throughout the continent as it is in England and America. Views have lately been shown, taken at a distance of 7,000 metres by a device adopted by M. Jarret, a well-known French optician.

At the late meeting of the London Camera Club, one of the members remarked that "photography may or may not be able to lie, but there was no doubt that photographers could and did."

URANIUM TONING OF BROMIDE PRINTS.

BY J. WEIR BROWN.

[A Communication to the North London Photographic Society.]

SINCE I first published the results of my experiments for obtaining warm tones on bromide papers a good deal of attention has been given to the subject, both at home and abroad. I should like, if I could, to give you what I might call the whole subject of bromide toning up to date; but this would be a large order, as there are now so many methods suggested. In my first communication on this subject to the *British Journal of Photography*, I expressed a hope that what I had written might lead others more experienced than myself in photographic chemistry to take up the subject and perfect the process—to complete the ship, of which I had laid down the keel, or to build another. It is gratifying to me to find that the matter has been pursued by several able workers, that many suggestions have been made for the production of these warm tones, and that more are promised us in the near future.

Various Methods of Toning.—Some of the methods that have been suggested had formed the subject of experiment with me, and had been discarded before I hit upon the uranium toning method. Others—some being for the production of the tone by development direct—I had not tried. One of these, published in one of the German papers, and copied into the *Year-book*, seems to rely on the same principle as the method of development I have suggested *preparatory* to toning, the difference being that the developer is still more dilute than what I recommended. But there is another difference which takes the process quite away from what I had done. The tone is obtained by a *second* development, the first being much of the ordinary character, a weak eikonogen developer. The reappearing image presents itself first as a peachy pink, and proceeds through different stages of warm to dark brown.

The action, of course, is very slow; I think you might set it to work in the morning, go to business, and find it not overdone

when you return in the evening. This is roughly the principle which is followed, but you will find full particulars in the *Year-book*.

Another method which is promised, but which has not been publicly shown, comes from America. I saw some prints by this process some months ago, not knowing then that they were not produced by uranium toning. It is now announced, however, that the uranium, or whatever be the color-producing agent, will be contained in paper, or rather in the emulsion. This forms the subject of a patent, and no doubt it will prove a valuable one. The prints I saw were very fine in color. Yet another method is promised us by my friend, Mr. Haddon. He is said to employ a salt of copper, but I have no information on the subject beyond what was stated in the brief notice in the public prints.

The various methods that have been suggested seem to me to be hampered mostly with two drawbacks. First, as a rule, it is difficult to estimate beforehand what tone it is possible to get, or to obtain the same tone at two different times from the same negative. The second is that all these methods are more or less tedious, and this would particularly apply where redevelopment was resorted to. The perfect simplicity of the acid uranium method of toning, the variety of tones obtainable by it, and the power of getting the same time after time, has always appeared to me its special charm. You may be going over your collection of bromide prints, and one may strike you as being too cold for the class of subject. In a few minutes, if your laboratory contain the necessary stuff, you can judge of its appearance in sepia or a warmer brown. If it pleased you better as it was, pop it into running water, and in a couple of hours you will have it as it was.

Working of the Ordinary Uranium Toning Process.—As regards the working of the process, for the benefit of those who may not have heard or seen it described, I will run rapidly through it, but I really do not think that there will be much to add to what has been already published. The first thing, of course, is to get a good negative. One made with lantern-slide work and enlarging in view will save you a lot of trouble. Dense negatives require

long exposures which are difficult to estimate, and seldom, with that, give soft results, develop ye ever so skilfully. As to exposure, the effect you wish to produce will have to be taken into consideration; but, in any case, I recommend a liberal exposure. A print that develops very brilliant—one that has been a little undertimed—will not tone well to the sepia or warm brown. It will be apt to look hard. For red chalk tones, however, which I will allude to hereafter, a stronger print should be produced. But for the present, we are dealing with the sepia and warm browns. A full exposure should, therefore, in my opinion, be given. The developer, again, should be made up to suit exposure and effect desired. I have recommended a dilute hydroquinone developer—say, one part of the mixed solution with two parts or more of water added; or, to put it otherwise, one part each of what we are in the habit of hearing called Nos. 1 and 2, or A and B, and four or more parts of water added.

This will not give a good black and white print. With slow Ilford paper it will give, in some cases, a very fair sepia, but generally a dirty brown. This brown image is the most amenable to the after-toning. With rapid papers you do not get this color. In using them, you must expose and develop so as to get a soft grey image with full gradation. I don't mean the flat grey image resulting from over-exposure. The difference between the slow Ilford and any of the rapid papers under development is remarkable. With the recommended full exposure and dilute developer the image on the slow paper first makes its appearance in a yellowish fawn tint, getting redder as development progresses, and passing on through brown to what appears to be black by canary light. After fixing, this apparent black turns out to be a brown. This is my experience most markedly with hydroquinone, and not so much with para-amidophenol. This yellow and brown appearance during development has made me conjecture that the slow paper might be a chloro-bromide. I have used a sample of para-amidophenol, which was kindly given me by Mr. Sargent, for some trials, and found it very suitable if sufficiently diluted. The development was slow. For producing good black and white bromides, however, it is not necessary to use it so dilute,

but, as the development is very rapid, only the correct exposure is any good. It gives beautifully clear results.

A Developed Brown Image not a Necessity.—The brown image got by development is by no means a necessity. I have only *recommended* it, when working with hydroquinone developer, as being more suitable for receiving the after-toning. What, however, *is* necessary is that a soft and harmonious image be produced. Since the introduction of the phenol developer I have found it very useful for this purpose, and have used it in the form of rodinal almost constantly in place of hydroquinone. It gives a print of great delicacy, of a soft grey tone, and may be diluted for that purpose to form 1 in 100, to even 1 in 400, according to the strength of the negative from which are working, and the effect you wish. Of course, diluted so much as the last figures, rodinal would be useless for producing black and white prints. They would be much too flat, but such an image, you must remember, gives very often an excellent toned print, as the toning agent has a decided intensifying effect.

The prints are, of course, fixed in the usual way, and the after-washing must be very thorough, as the least trace of hypo produces a red stain the moment it comes in contact with the toning bath. "Tae mak' siccar," as we say in Scotland, before toning, I treat the print for five minutes in a bath of—

Peroxide of hydrogen (20 volumes)	1 part.
Water	40 "

and wash again for five or six minutes.

The toning bath may be conviently made up of the following strength:—

Glacial acetic acid	10 minims.
Potassium ferricyanide	½ grain.
Uranium nitrate	½ grain.
Water	1 ounce.

This will not act too rapidly. It may, of course, be made stronger if desired, and I do so on occasions. The prints quickly change color, the sepia stage being reached in a couple of minutes, and five or six minutes, as a rule, being sufficient to get the

warmest brown you would care for. If carried on, the toning will continue till it reaches a heavy black red, and until recently this was the nearest I could get to the chalk-red or Bartolozzi print tint. Within the last few weeks, however, I have discovered a mode of getting much brighter red tones, and this I will describe presently. The toning action may, if you like, be carried on some shades beyond the color it is intended to finish, and the final determination of the stopping point left till the next stage, the washing. But this over-toning, again, is by no means a necessity, although it has been suggested that I have insisted upon it, and that I thereby erected a barrier to its simple working. The print may be taken from the toning bath as soon as the desired color is reached, for the necessary after washing is so slight that very little reduction will occur.

Washing, Drying, and Finishing.—The colored image, or rather the colored deposit on the image, however, is very soluble in water, so that any *too great* redness can be easily got rid of simply by continuing the washing a little longer. When the print leaves the toning bath, the high lights are of a lemon yellow color. Five or six minutes in running water will be sufficient to remove this, and the print is then ready for drying and finishing. If it be, however, still warmer than is desired, the washing will be continued till the color has reached almost what is wanted, some allowance being, of course, made for a little darkening in the drying.

This point being reached, it is important that the print be blotted off in clean blotting-paper or calico till it is surface dry, as, if the moisture be left in patches on the surface, there will be inequality of tone when the paper is dry. This forms a decided drawback to the use of uranium as a toning agent for lantern slides, as it would be sure to spoil a slide to blot it surface dry, unless there is some absorbent substance that could be used for the purpose that leaves no woolly stuff behind it. The use of spirits to expel the water will, no doubt, obviate this difficulty. The omission of the blotting off in the case of paper prints has been the cause of a good many failures which have been referred to me by correspondents. To produce a set of prints, all of the

same depth of color, blot off one at the required color, and set it on a glass plate, or any other clean support, at the side of your washing tank, blotting off the others, one by one, as they reach the same tint.

I may just add a word here as to the mounting of prints. Some enlargements have been submitted to me in which the tone has been considerably reduced at places. This is caused by the prints having been wetted on the surface by the mountant, and allowed to dry in that state. After mounting I always run the print over with a sponge just damp, and in that way secure equal moisture on the surface and even drying.

Chalk Red or Bartolozzi Effects.—This, I think, brings me to the end of the ordinary toning process. It has taken a lot of telling, but in practice ten minutes will do the toning and washing for a print in warm brown. I have now to speak of the chalk red or Bartolozzi print color. To produce this the procedure is very little different. Development should be carried further, so that the faintest details are decidedly out, as the strength of the picture will depend altogether on the color deposit, the unchanged silver being removed afterwards. For this color it is advisable, also, to produce pluckier prints than are used in the brown process, as, if too soft, your deepest shadows are apt to look weak after the silver is removed. When this fully developed image is toned for a considerable time it will have attained a black-red appearance, as shown in the left hand section of this print. This appearance will present itself in fifteen to twenty minutes, but it is desirable to let the action go on for an hour, as, at first, the color deposit is only on the surface, and if the unchanged silver underlying this be then removed the whole of the force in the shadows would be lost. When it is judged that the tone has penetrated the deepest shadows the print is washed in running water for five minutes, or till the acid is removed, and is then immersed in a bath of Farmer's reducer. All the black heaviness dissolves out, and you have left something approaching a red chalk drawing. The hypo is now to got rid of, and to effect this as speedily as possible I again resort to peroxide of hydrogen. A couple of minutes' washing before immersion in this bath, and five minutes after washing, will

have freed the paper from the hypo. The immersion should also be for five minutes. If the high lights now seem to want clearing continued washing will have the desired effect, or, if you are impatient, add a little alkali to the water, and it will reduce quickly enough. If you use washing soda for this, or any other alkali in crystals, see that these are all dissolved before immersing the print, as, if any crystals touch the paper, the color will be removed from the spot in contact almost at once.

For a dark green color, which would give something of a night effect to a seascape, it is only necessary to place a toned print in a very weak solution of perchloride of iron and hydrochloric acid; but this I call playing pranks. I must warn you that it is rather fluky, and you may get a bright blue instead of a green.

I will not say more upon the chemical action involved in the uranium toning process than that a theory has been put forward by Mr. Levy, of the Photographic Club, in which he suggests that the ferricyanide of potassium combines with the silver image and forms a ferrocyanide of silver, with which the uranium nitrate enters into combination. I am not aware whether chemists accept this as the correct explanation, and no doubt the subject may still be forming the subject of investigation. It has, however, been proved by Mr. Haddon that there is no loss of silver when the toned image seems to have been washed away by long subjection to running water, although a bright-red-toned print—one, of course, from which the silver *has not been removed* by Farmer's reducer—may be washed out to a mere ghost. This ghost may be revivified by conversion into bromide of silver, exposure to light, and redevelopment, and may be again toned to any desired color.

Mr. Haddon's Suggestions.—I have now described the process as I am in the habit of working it myself, and at this stage I wish to express my thanks to Mr. Haddon, of the London and Provincial Association, for his recent communication as to a means of improving the working of the uranium toning process. This is the first outcome of the appeal I made for help more than a year ago, for although many have tried to put forward other methods of toning bromides, Mr. Haddon has been the only one to make

any practical suggestion for the improvement of the uranium method. The suggestions made by that gentleman were three: First, that by using an acidulated washing water the loss of tone in clearing the print would be done away with. Second, that by increasing the quantity of uranium nitrate to about five times the amount of the ferricyanide, the precipitate of ferrocyanide of uranium in the toning bath would be avoided, and a saving of precious metal effected; and also that the bath in that condition would be of good keeping quality. The third suggestion had reference only to the chalk red process. To avoid the reduction which may occur in removing the hypo used in that process, he suggests that the silver can be removed from the print by the substitution of sulphocyanide of ammonium and ferricyanide of potasium in place of Farmer's reducer.

To deal with the last suggestion first, I may say at once that I have not yet tried it. But it occurs to my mind that the sulphocyanide will have to be removed from the paper in the same way as the hypo, or if it be left without more than a few minutes' washing, I would like some one who knows to say whether its retention in the print would not set up some combination which might endanger the print. As regards this suggestion, I would say that the difficulty it is designed to obviate is more imaginary than real, as those who will practically work the process will immediately see. The red image, from which the silver has been removed by Farmer's reducer, is sufficiently hard to wash out so as to be very little affected by the amount of washing required to be done in the way I suggest. The full development of the image, in the first place, is not, as suggested by Mr. Haddon, for the purpose of allowing for washing out, but for the purpose of getting decided strength in the weakest detail, as they, when toned and the silver removed, would naturally look weaker in a faint red than they do in the original grey. By using the peroxide of hydrogen the hypo is so quickly eliminated or decomposed that there is little perceptible reduction in tone, and I have not found any one to positively state that the prints will suffer from the hypo eliminator if they have five minutes' washing in running water after they are removed from it.

Comparative Experiments.—Now, as regards Mr. Haddon's suggestion to wash after toning in water acidulated with acetic acid, with a view to removing the yellow stain without reduction of the tone, I have made a comparative experiment to illustrate to you the advantage or otherwise of this suggestion. I submit to you a print which has been toned to a red-brown color, and from which section "A" was cut off and thrown into running water, and there remained for nine minutes, and then blotted off and dried. Sections "B" and "C" were washed in thirteen changes of acidulated water over a period of sixty minutes. Section "B" was then cut off, blotted, and dried, while section "C" was thrown into running water and washed for seven minutes, and then dried.

It will be observed that the yellow stain is not removed from "B," although it has been treated with constant changes of acidulated water for an hour, and that it is only when it has received a further washing of the usual time in plain water that the print is cleared. In the gaslight this is not so apparent as it is in daylight, but you can, I think, clearly see the marked difference between "B" and "C."

Now, on comparison of "B" and "A," it will be observed that "B," which was treated with acid, has decidedly suffered less loss of tone than the section treated only with plain water. This latter, however, I may say, received four minutes more washing than was absolutely necessary to remove the yellow stain, while "B' was removed from the water the moment the stain was sufficiently removed to make the high lights match with those of those of "A." On the whole, I admit an advantage for this suggestion; but it is so unimportant, and obtained at the expense of an extra expenditure of time, that, in my own practice, I shall probably content myself with the old method.

And now I come to the suggested alteration in the proportions of the constituents of the toning bath. This alteration is, no doubt, based on sound theory, and it is too soon yet to say whether, in actual practice, it will not result in some improvement. My experiments, however, so far do not give me such satisfaction as I anticipated from Mr. Haddon's suggestion. As you will observe

from the bottle of solution I submit to you, and which has been made up according to the formula given, and used to tone four half-plate prints, there is not that absence of precipitate which was anticipated. There is, in fact, more precipitate than in a bath of the old proportions which has done nearly double the work. It may be urged, of course, that the one contained ten times more uranium at first than the other; but it was with a view to retaining that uranium in solution that this great increase was made. If the alteration be advocated on the score of economy, I think it is very doubtful if the aspirations of its proposer will be realized. The altered bath costs ten times more than the one made by my formula, and, even at that, is not a very ruinous affair, but when it is considered that an eight-ounce toning-bath, made by my formula, will cost for uranium nitrate (2s. 4d. per ounce) exactly one farthing, it is scarcely worth while saving it after it has been used for a few prints. I should think it will be less trouble to put it down the sink. As to the keeping quality of the bath (Mr. Haddon's), my experiments are satisfactory. After keeping for eleven days, I toned a print (the fourth) in quite as short a time as was required for the third. The precipitate, however, further increased, and it is questionable if it will keep sufficiently long in use to do the same proportion of work as could be done by ten fresh baths of the original composition. I have tried a bath of the altered proportions, diluted to the same strength of uranium as my formula; but, although it tones at first exactly the same as mine, it rapidly deteriorates. I have put on the blackboard a table showing the comparative time taken to tone six prints in succession at intervals of half an hour in each of the two baths, from which it will be seen that, whereas the first prints in each were toned to a standard color in five minutes, the sixth prints took respectively twelve and thirty-two minutes.

Table of Results.—These two baths were again tried eight hours later, when the old bath toned its print to the standard tint in eight minutes; whilst the new diluted bath was found to be practically inert. Upon adding, however, sufficient ferricyanide to bring it up to the same composition as my formula, it toned a print in five minutes, and the amount of precipitate, as you will observe,

is very slight indeed. No doubt it will do its work all right still, after a further lapse of forty-eight hours. We will probably try it when giving the little bit of demonstration with which I now propose to conclude this paper.

The following table will show the relative rate of working of the three baths. The time taken to tone a print to a standard color is stated in minutes:

Uranium Nitrate, . . .	5 grains.	0·5 grain.	0·5 grain.
Potassium Ferricyanide,	1 grain.	0·5 grain.	0·1 grain.
Glacial Acetic Acid, . .	30 minims.	10·0 minims.	10·0 minims.
Water, ...	1 ounce.	1 ounce.	1 ounce.
Print No. 1, ...	2½ mins.	5 mins.	5 mins.
" " 2, ...	3½ "	5 "	5 "
" " 3, ...	5 "	8 "	13 "
" " 4, eleven days later, . .	5 "		
" " 4, ...		10 "	15 "
" " 5, ...		10 "	20 "
" " 6, ...		12 "	32 "
" " 7, eight hours later, . .		8 "	Bath exhausted.

Browning.—A gentleman lately wandering through the streets of London, stopped to look in at a window where photographs were displayed to catch the eyes of passers-by. While staring at the photographs of crowned heads and professional beauties it occurred to him that he would like to have a picture of Browning, of whom he was a great admirer. "Have you any photographs of Browning?" he asked the urbane salesman. "Yes, sir," was the prompt reply. Wondering why the young man made no show of getting them, the customer said: "I should like to buy one; let me see them, please." "They are not for sale, sir," said the young man. "Not for sale! Then what have you got them for?" "To give to 'is friends, sir, not to sell to strangers," the clerk replied, showing some annoyance at my friend's persistence. "This is most extraordinary," said the American, getting angry. "You sell photographs, and I want one of Browning, which you say you have, but you won't sell to me. I should like to see the proprietor and ask him what it means." The clerk stepped up to a fat little bald-headed man sitting at a high desk and said: "Mr. Browning, sir, there's a gentleman as hinsists upon 'aving your photograph, and won't take 'no' for a hanser, sir." And at the same moment my friend noticed the name on the door, "Browning: Artists' materials, etc. !"—*The Critic.*

THE IVES DEMONSTRATION OF THE REPRODUCTION OF THE COLORS OF NATURE.

THIS long-looked for event came off on the evening of April 5th, and proved a satisfactory success, both financial as well as scientific.

Our daily contemporary, the *Philadelphia Record*, gives the following full and interesting account of the demonstration, viz.:

The first public lecture illustrated with specimens of colored photography was delivered at Association Hall last night under the auspices of the Photographic Society of Philadelphia. Scientific demonstrations of the Ives process had been previously made at the Franklin Institute, but these were purely of a scientific nature. The hall was filled to the roof last night by an enthusiastic audience, and every view in colors was received with applause that brought blushes of pride to the cheeks of F. E. Ives, the pioneer of colored photography, who worked the stereopticon end of the lecture from the balcony.

"From Philadelphia to the Grand Cañon of the Yellowstone National Park," was the subject chosen for the lecture. Mr. Ives furnished the colored photographs, while W. N. Jennings furnished the plain photographs, and delivered the lecture. In his introductory remarks, the latter paid a graceful tribute to his co-laborer.

The first views were from plain photographs, but when the first colored photograph was projected, the audience gazed spell-bound. For a moment there was a dead silence. Then as one man the large audience burst into applause that lasted for several minutes. From that moment the success of the lecture was assured.

When thrown upon the canvas the colored photograph is a perfect miniature of nature. No oil painting could possibly produce even an approach to the effect caught in the magic lens of the color camera. The delicate cloud effects, the various tints of foliage and water, the different colors in the rocks, all are perfect. The view of McCartney's cabin, the first hotel established in the Park, is a thorough test. The many gradations of color in the landscape are brought out perfectly. Where the logs of the cabin have been exposed to the weather, they have become bleached, while those in the shelter of the overhanging eaves still retain their natural orange brown color. The grass in the foreground suffers from a lack of moisture, while that in the rear of the cabin, fed by a mountain stream, is a bright, fresh green. Another shade of green is visible in the window blinds, and still another in the dark pines on the hill side. The dark indigo blue of the sky stands

out in bold relief. All the colors of the original landscape and its finest gradations of light and shade are here most faithfully reproduced.

Mr. Jennings' lecture was delivered throughout in a delightfully chatty vein, interspersed with wit and anecdotes of no mean quality. His own plain photographs, many of which were character sketches, added much to the charm of the entertainment, but as he himself admitted, the crowning feature was the perfection of Mr. Ives' experiments with the color camera. The Yellowstone Park was chosen because of its variety of color. The scene from Jupiter's Terrace is full of it. In the foreground is a small pool. In the centre, the water is almost boiling, from which radiate delicate bluish green silken threads gradually running through the scale of color, until at the edge of the pool it assumes a deep purple. The cliffs of Golden Gate afford an excellent opportunity for the reproduction of color in rocks.

"Even the most prominent impressionist," said the lecturer, "wrings his hands in despair as he gazes upon this marvelous mosaic, and frankly confesses that brush and pigment in the hands of the most skilled artist fall far short of doing justice to this masterpiece of nature.

Mr. Ives starts on a two months' European tour next week, partly to obtain views, and partly to accept numerous invitations to lecture before the best known scientific institutions of Europe. Upon his return, he will spend the summer in the Yellowstone Park, which locality, he says, is unexcelled for the purpose of procuring colored photographs. Since last summer's trip he has perfected the color camera, and where previously he experienced some difficulty in reproducing the colors in the water because of the reflection, he will now be able to overcome this difficulty. He expects to return next fall with hundreds of views, even better than those exhibited last night.

World's Fair Note.—The Board of Lady Managers is making arrangements for an extensive exhibit showing woman's share in the illustration of books, in engraving, and other forms of picture production. During her recent visit to New York, Mrs. Palmer consulted with a number of publishers, and received considerable assistance from them. A list of distinguished woman illustrators was secured, and plans set on foot to obtain old volumes and manuscripts illustrated by woman, together with historical data concerning woman's share in this line of work from ancient times down to the present.

The Editorial Dropshutter.

Mr. Frederick E. Ives thus technically describes his patented process for obtaining and projecting pictures in the colors of nature by aid of photography: "By means of a very ingenious compound camera front, three photographic negatives of the object are made by simultaneous and equal exposure, from the same point of view, and upon the same sensitive plate. The photographic plate is sensitive to all colors of light, but by introducing light filters, one of the negatives is made by such light rays only as excite the fundamental red sensation, and in due proportion; another by such light rays as excite the fundamental green sensation, and another by such light rays as excite the fundamental blue-violet sensation.

"From this triple negative a triple lantern slide is made, which, although it shows no color, contains such a graphic record of the natural colors that in order to reproduce them to the eye it is sufficient to superpose the three images, one with red light, one with green, and one with blue violet. This is accomplished either in Mr. Ives's new heliochromoscope, a device about the size of a hand stereoscope, and used in much the same way, or by projection with a special optical lantern, having three optical systems, with red, green, and blue glasses.

"The process is as scientifically accurate for reproduction in color as ordinary photography is for reproductions in monochrome, but at present can be carried out successfully only by a scientific expert employing the photospectrograph for testing the sensitive plates and adjusting the selective color screens. When such preliminary adjustments have been correctly made, the process is almost as simple and reliable as the ordinary negative process. By a modification of the process, introducing further complication, color prints are made on glass or paper; but the comparative simplicity of the plan of superposing images commends it to scientists, and is more convincing to the general public."

Recent Improvements in Platinotype.—A new cold bath paper.—Mr. W. Willis recently read a paper before the Camera Club Conference, in the course of which, after pointing out that the effects of lowering the true temperature of the developing solution in the hot bath process reduced the chances of successful development, brought out defects in the paper, and gave a granular deposit of the image; he said that in 1888 he had attempted to make a paper developable at ordinary temperatures. The cold-bath process, since brought out, had, however, been disappointing, and the hot-bath process had been found more generally useful. They could now develop at much lower tem-

peratures than formerly, 90° being the limit reached. But failures often occurred, due to the low temperature, as rapidity of reduction varied with the different temperatures. We had recently discovered a method of preparing ordinary platinum paper, so that rapidity of solution should not overtake that of reduction, and the image be developed before the salts could be removed from the paper. For obvious reasons, he could not make the process public, but development conducted at a temperature of from 60° to 70° normal temperature gave results equal to those obtained at 130°, free from granularity and other defects. The process had only recently been perfected, but it was completely under control. It might not please his friends of the new school, who did not want fineness of deposit; but more photographs depended for their value on the very quality which the modern school rejected. He showed a number of graduated comparisons between the new paper and the old at various temperatures, the former being much superior in fineness of detail and clearness of line. The ordinary paper was developed at 130°, and the new at 56°. With the latter the ordinary oxalate bath or that containing ortho-phosphate could be used. Development of the new paper was slower than the old, thirty seconds being required before the action was complete. The addition of a small quantity of hypophosphite of sodium gave control to development. Mr. Willis then developed several pictures at a temperature of 64° Fahr. These were much admired. Development in sections failed to produce lines in the picture.

A Novelty in Films.—Advices from France mention a novelty in transparent films for photographic purposes, which it is claimed gives them all the advantages of both glass and films, without any of the shortcomings of either. The new candidate for photographic favor consists of a film stretched over a light metal frame of the thickness of ordinary glass, which improvement allows them to be used in any dry-plate holder having no adapting spring in the back.

The base of these films is not celluloid, and it is claimed they will always lie flat and neither warp nor curl. The development and manipulation is exactly like a glass plate, with the addition of a glycerine bath after the final washing; this consists of

Water	1,000 ccm.
Glycerine	60 ccm.

after which the plates are stood up in a rack to dry.

To obtain a reversed negative, it is only necessary to run a knife around the edge inside of the metal frame.

[The advices received, however, fail to give the effects of our reducing or fixing agents upon the metal frame.—Ed. Amer. Jour. of Photog.]

Photographic Hints and Formulæ.

A Bromide Paper Developer.—There are already about a hundred or more developers by which the image upon a bromide of silver paper can be made to appear in sufficiently varied tints to suit the most fastidious. Dr. Eder, however, recommends another, and offers as an advantage, that with this method the whites remain purer,—a very considerable advantage when we take into consideration the difficulty often experienced in this direction with this kind of paper.

The formula is as follows:

Solution A.

Pyrogallic acid	4 grams.
Metabisulphite of potash	15 grams.
Distilled water	400 c.c.

Solution B.

Carbonate of soda	10 grams.
Sodum sulphite	15 grams.
Distilled water	100 c.c.

For use, take one part each of *A* and *B* and water. It acts very energetically, and can be modified by lessening the quantity of *B*, or altering the amount of water.

Herr Angerer, of the well-known firm of Angerer & Goschl, Vienna, recommends a compound developer which is result of several searches after the very best.

Solution A.

Eikonogen	22.5 grams.
Hydroquinone	7.2 grams.
Potass. Sulphite	150 grams.
Water distilled	1250 grams.

Solution B.

Carbonate of Potash	75 grams.
Water	250 c.c.

A and *B* are to be mingled with discretion, in proportions suitable to exposure, just before development.

M. Max Jaffe recommends the following method of stripping gelatine plates for collotyping with safety: The negative should not be collodionated, but covered with a solution of fifteen parts of gum arabic in one hundred of water. Thereupon a sheet of gelatine, which has been swelled in water, is passed on to it and allowed to dry, whereupon the stripping may take place without danger.

Development of Contact Bromides.—Dr. Braunschweig, in an address delivered before the Photographic Society at Halle a S., stated that in a series of experiments in development of contact bromide prints, he had found Rodinal to be simplest and best; the proportions with which he had obtained superior results were from 1:100 to 1:150; after the image was developed they needed but a good washing, and then the usual fixing.

The simplicity of the process was not alone the great point in its favor, as the manipulation was so completely under control that failure was almost impossible with ordinary care; thus with

(1) Underexposure, it was but necessary to strengthen the developer.

(2) Overexposure, easily remedied by use of diluted old developer.

(3) Flatness, result of exhausted developer, add more stock solution.

(4) Overdenseness, reduce in acid fixing bath.

Ferrotype Dry Plates.—L. Nievsky, in a communication to the *Photographic News*, states that having received several inquiries about the best formula for his ferrotype dry plates, he takes pleasure in putting it at the disposal of the public. The formula is:

Ordinary water (warm)	1 quart.
Carbonate of soda	½ pound.
Sulphite of soda	¼ pound.
Hydroquinone	½ ounce.

2 ounces of 10 per cent. solution of bromide of potassium.
½ ounce of saturated solution of hyposulphite of soda.

Dissolve first carbonate and sulphite, add hydroquinone and bromide, let settle the sediments (impurities) for twenty-four hours; then pour off the clear part and add the hypo.

In very cold weather the development takes from 60 to 90 seconds, in a moderate temperature 40 to 60 seconds, and, when warm, the developer does not want more than 20 seconds to complete fairly exposed pictures. It can be used over and over again, until complete exhaustion of the liquid. I have found that the same formula is excellent for ordinary gelatine plates, and though the developing is slightly longer than with other formulas, the result of a brilliant negative pays with interest the loss of time.

Dr. Jeserich has discovered that the isochromatic plates which he prepares will detect the difference in tint between two different samples of black ink, and shows by his photograph that figures or words in a document which have been added fraudulently to the original can be

thus differentiated from the rest. The first business of the educated forger of the future will be to find out whose ink his intended victim is in the habit of employing.

Rodinal, according to the *Chemische Zeitung,* is prepared as follows:

Potassium metabisulphite	30 parts.
Para-amidophenol hydrochlor	10 parts.
Boiling water	100 parts.
Soda hydrate	q. s.

Dissolve the first two as far as possible in water, and then add slowly a concentrated solution of caustic soda, until the precipitate at first formed is again dissolved, and the solution clear.

Photomicrography.—The importance of modern photography as applied to microscopic objects is forcibly brought out by the following remarks made Prof. Robert Koch, the eminent bacteriologist, who employs photography with great success to bring out the most minute parts of inorganic bodies.

Prof. Koch likens the negative plate to a human eye not blinded by a sharp light nor tired out by long-continued examinations.

"The negative," says Prof. Koch, "frequently shows very fine bodies and parts which are afterward discovered by the microscope on the object itself, but only after very hard work, and under the most favorable conditions regarding light, etc.

"Accurate measurement of but faintly visible objects is almost impossible under the microscope, but on the finished negative the task is rendered comparatively easy. The photographic picture of a great many objects is frequently of more importance than the object itself. If I give to somebody a prepared specimen for viewing certain parts of the same under the microscope, for instance, lymph vessels containing bacteria, then I am not certain that the party has found the right spot, and if this is the case, I am not positive that he is viewing the part under the same light and condition as I did. A photograph, however, gives the microscopic picture exactly in the same light, the same enlargement, etc., as I viewed it at the time of focusing it.

"It is very simple to explain the photograph to a number of persons at the same time, as one can point with the finger to a particular part, or measure it with the compass, or compare it with other similar photographs placed alongside of it,—in short, you can do almost anything in order to come to an understanding."

Photographic Scissors and Paste.

Fluorography is a process of transferring lithographic or phototypic prints to glass by means of fluorated inks, which, in contact with sulphuric acid, disengage hydrofluoric acid, which eats into the glass. The phototype is inked with the following compound:

Soap	50 grams.
Glycerine	200 grams.
Tallow	50 grams.
Water	100 grams.
Borax	25 grams.
Fluorspar	50 grams.
Lampblack	15 grams.

Negatives are taken and transferred into the glass. The latter is surrounded with a border of wax, and covered with sulphuric acid of a density of sixty-four or sixty-five degrees Baume. After fifteen or twenty minutes the acid is poured off, and the glass washed with water and cleaned with a solution of potassa; then washed with water again, and dried with a cloth. According to the *Revue de Chimie Industrielle et Agricole* this is the process that gives the best results.—*The American Art Printer.*

Non-Actinic Glass.—Mr. Franz Wetz, of Klostergrab, Bohemia, has succeeded in making rose-colored and orange-red glass by a new process, one of those that avoid the necessity for reheating the manufactured goods, or "flashing" them with the gold-colored ruby glass. The materials said to be used are selenium, or selenium mixed with sulphide of cadmium, according as the "rose" or "orange-red" color is required. The materials are added to the fluid glass in the melting pot, and color it throughout.—*The Optician.*

Stained Negatives.—Negatives intensified with bichloride of mercury, which have become discolored and useless in consequence of insufficient washing after fixing, may be restored by soaking in a solution consisting of equal parts of the following acid fixing solution:

Sulphide of soda	250 grams.
Water	1 liter.
Muriatic acid	70 c.c.

with ordinary saturated solution of hypo. A bath has been known to remove the strongest discolorations.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

THE annual meeting of the Society was held Wednesday evening, April 13th, the president, Mr. John G. Bullock, in the chair.

In accordance with the resolution passed at the last stated meeting, the appointment of the following Special Committee on Standards was announced: Prof. Benjamin Sharp, George W. Hewitt, Theodore H. Luders, Lewis T. Young, and William H. Walmsley.

The monthly report of the Board of Directors announced the death of four active members since the last meeting, as follows: Messrs. Thomas Hockley, Louis Reichner, Jr., William L. Springer, and William A. Cheyney.

The following persons have been elected to active membership: George W. Morris, James Douglas Blackwood, M. Grahame Hallock, and Allen G. Miller.

At the conversational meeting, March 23d, American Interchange Lantern Slides from Chicago and St. Louis were shown.

The annual report of the Board of Directors was read by the secretary, and was a notable record of the prosperity and usefulness of the Society. The principal events in the history of the Society were recited, among which may be mentioned the following:

April 8th, 1891. *Discussion:* "New Developing Agents." *Paper:* "A Suggestion for a Possible Method of Identifying the Colors Photographed," by J. F. Sachse.

May 13th, 1891. *Demonstration:* Toning of Omega Paper, by C. E. Hopkins (a visitor.)

June 10th, 1891. *Paper:* "On the Preliminary, Secondary and Supplemental Lighting of the Photographic Plate," by J. F. Sachse.

October 21st, 1891. *New Room*, at 10 South Eighteenth St., first occupied for meeting.

October 28th, 1891. *Illustrated Lecture:* "Photography in the Arctic regions," by Prof. Benj. Sharp.

November 11th, 1891. *Paper:* "Preparing strong Ferrous Oxalate," by Caspar W. Miller. *Competitive Exhibition* of Hand Camera Lantern Slides.

January 13, 1892. *Discussion*: The Permanence of the Undeveloped Image on Dry Plates.

January 21st, 1892. *Competitive Exhibition* for Honor Pictures.

February 3d, 1892. *Illustrated Lecture:* "Switzerland,—The High Alps," by C. L. Mitchell, M. D.

February 10th, 1892. *Paper:* "The Fading of Silver Prints," by Ellerslie Wallace, M. D.

February 23d, 1892. *Public Exhibition* of Lantern Slides; the work of members.

March 9th, 1892. *Paper:* "Photographic Objectives," by W. A. Cheyney. *Discussion:* Recent Appliances for the Optical Lantern.

March 15th, 1892. *Illustrated Lecture:* "Picturesque Norway," by C. L. Mitchell, M. D.

April 5th, 1892. *Illustrated Lecture:* "From Philadelphia to the Grand Cañon of the Yellowstone," by Frederick E. Ives and Wm. N. Jennings, with natural color photographic projections.

During the year six members had been lost by death; 34 new members were elected; the total number now on the roll being 200, or about the same as at the date of the last report. In view of the fact that the annual dues had recently been doubled, this fact had been considered very gratifying.

The increased interest and usefulness of the stated meetings was shown in the fact that the average attendance had increased twenty-five per cent. over that of last year.

The Special Committee on Entertainments reported that the three public entertainments in aid of the Home Fund had been very successful, resulting in a net profit of $525.61.

Action on the amendment to the By-Laws proposed at the last stated meeting, to increase the initiation fee of active members to ten dollars instead of five, resulted in the defeat of the resolution.

The election for officers and Directors for 1892–'93 resulted as follows:

President, Joseph H. Burroughs; Vice-Presidents, Edmund Stirling, Charles R. Pancoast; Secretary, Robert S. Redfield; Treasurer, George Vaux, Jr.; Directors, John C. Browne, Charles L. Mitchell, M. D., John G. Bullock, William H. Rau, Frederic E. Ives, Samuel Sartain, George M. Taylor, John Carbutt.

An illustrated lecture was given by Dr. Benjamin Sharp, his subject being "A Trip Through the West Indies," which was followed by a demonstration of the process of making lantern slides with gelatine dry plates. Adjourned. ROBERT S. REDFIELD, *Secretary.*

Mr. Frederic E. Ives requests that the following correction should be made in regard to the discussion reported at the stated meeting of the Photographic Society of Philadelphia on March 9th. He is reported as saying that "ordinary optical is opaque to some of the violet rays," but what he actually said was that it was opaque to some of the *ultra*-violet rays."

In the Twilight Hour.

A FAVORITE has no friend.

To bear is to conquer our fate.

HE preaches well that lives well.

LEARN the luxury of doing good.

BE wise to-day; 'tis madness to defer.

HONOR and shame from no condition rise.

THE world knows nothing of its greatest men.

THE paths of glory lead but to the grave.

ALL men think all men mortal but themselves.

A THING of beauty is a joy for ever.—*Keats.*

CHARMS strike the sight, but merit wins the soul.

WHERE men agree, their unanimity is wonderful.

A FELLOW-FEELING makes one wondrous kind.

IT is a base thing to tread upon a man that is down.

To find out one's own folly is the great point of wisdom.

A FOOL must now and then be right, by chance.—*Cowper.*

To live in hearts we leave behind,
Is not to die.

HE hath a good judgment that relieth not wholly on his own.

THE great end of a good education is to form a reasonable man.

FOUR hostile newspapers are more to be feared than a thousand bayonets.

IT is a species of agreeable servitude to be under an obligation to those we esteem.

A WEAK mind is like a microscope, which magnifies trifling things, but cannot receive greatness.

TO-MORROW.—The day on which idle men work and fools give up their folly, and sinners repent and believe, and reform their character and life.

A FOOL can ask more questions than a wise man can answer; but a wise man cannot ask more questions than he will find a fool ready to answer.

MISFORTUNES are moral bitters, which frequently restore the healthy tone of the mind after it has been cloyed and sickened by the sweets of prosperity.

THAT which is good to be done cannot be done too soon; and if it is neglected to be done early, it will frequently happen that it will not be done at all.

NEVER risk a joke, even the least offensive in its nature and the most common, with a person who is not well bred and possessed of sense to comprehend it.

KIND words are among the brightest flowers of earth; they convert the humblest home into a paradise: therefore use them, especially around the fireside circle.

WHAT is friendship but a name—
A charm that lulls to sleep—
A shade that follows wealth or fame,
And leaves the wretch to weep?

WERE a hundred men asked, who, from small beginnings, have attained a condition of respectability and influence, to what they imputed their success in life, the general answer would be, "It was from being early compelled to think for and depend on ourselves."

Literary and Business Notes.

CRAYON PORTRAITURE, by J. A. Barhydt. 12mo., cloth. Paper, 50 cents; cloth, $1.00. The Baker & Taylor Co., 740 Broadway, New York.

A carefully prepared hand-book for professional and amateur artists, written with special reference to giving such full explanation of details as to furnish to those who desire to take up crayon work a full knowledge of all the materials required and their use and manipulation, together with all the methods and processes employed. The coloring of photographs, engravings and photogravures with liquid water colors and the making of French crystals are also fully treated.

The author's successfully accomplished intention was to furnish a manual that would enable the student, without other instruction, to learn with exactness all he required to know, in addition to some general knowledge of drawing, to enable him to undertake the making of crayon portraits for a livelihood or to gratify his taste as an amateur.

The book is handsomely printed on heavy super-calendered paper, and besides the cuts used to illustrate the text, contains two half-tone plates made from crayon portraits by the author, showing free-hand work, and that on a bromide enlargement, and illustrating the line and stipple effect. Sent, post-paid, on receipt of the price, by Thomas H. McCollin & Co., 1030 Arch Street, Philadelphia.

THE *Californian Illustrated Magazine* for April is beautifully illustrated, over a dozen of its twenty articles being embellished by artistic sketches, making the issue the most elaborately illustrated magazine ever issued west of New York. The success of the magazine has been phenomenal; and beginning with the May number, it will be printed from the same presses as those used by the great Eastern magazines, ordered especially for the purpose; so that the *Californian* will be one of the few magazines in the country having its own plant—a movement which will result in the best pictorial and typographical work obtainable. Among the papers of this issue of especial interest is one by Mrs. Helen E. Gregory-Flesher, A.M., on "The Hairy Men of Japan or Anois," one of the most remarkable and little known races. Mrs. Flesher is the second woman who has made them a study, and her paper abounds in fine illustrations of the people, their homes, and gods. Published in San Francisco. $3 per year; 25 cents a number.

Our Illustration.—An every-day street scene in Philadelphia. Among the most picturesque subjects to be met with in any large city, none are apt to attract the artist's eye quicker than a street mendicant. Mr. James Wood, of the Photographic Society of Philadelphia, has been unusually successful with this class of subjects, as may be seen by the specimen here presented.